

Notice of Allowability

Application No.

10/743,856

Applicant(s)

ESPINOZA ET AL.

Examiner

Art Unit

Jafar Parsa

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to an amendment filed on 12/2/2005.
2. ☒ The allowed claim(s) is/are 1-6, 17, 43-60 and 67 (renumbered 1-26 respectively).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 12/2/2005
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 11/28/2005.
7. ☐ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

J. PARSA
PRIMARY EXAMINER

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Primary Examiner
Art Unit: 1621

12/9/05

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Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A process for producing hydrocarbons, comprising:
 - contacting a feed stream comprising carbon monoxide and hydrogen with a bulk cobalt-based catalyst so as to convert at least a portion of said feed stream to hydrocarbons,
 - wherein the bulk cobalt-based catalyst comprises an average cobalt oxide crystallite size between 10 and 40 nm, and has a BET surface area between 10 and 150 m²/g, and further comprises
 - between about 40 48.8 and about 90 percent by weight of cobalt;
 - a textural promoter selected from the group consisting of zirconium, chromium, magnesium, cerium, and titanium;
 - optionally, a Group I metal; and
 - between 5 and 60 percent by weight of a binder selected from the group consisting of silica, alumina, titania, zirconia, and combinations thereof.
2. (Original) The process of claim 1 wherein the textural promoter is zirconium.
3. (Original) The process of claim 2 wherein the bulk cobalt-based catalyst comprises between about 2 and about 5 percent zirconium by weight.
4. (Original) The process of claim 1 wherein the bulk cobalt-based catalyst further comprises a Group I metal.
5. (Original) The process of claim 4 wherein the Group I metal is potassium.
6. (Original) The process according to claim 1 wherein the bulk cobalt-based catalyst has an attrition loss less than 40%.
- 7-16. (Canceled)

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- 7 ~~17.~~ (Original) The process of claim 1 wherein said hydrocarbons comprise hydrocarbons with 5 or more carbon atoms.
- 18-42. (Canceled)
- 8 ~~43.~~ (Previously presented) The process according to claim 1 wherein the bulk cobalt-based catalyst has an attrition loss less than 30%.
- 9 ~~44.~~ (Previously presented) The process according to claim 1 wherein the bulk cobalt-based catalyst comprises a BET surface area between about 80 and about 150 square meters per gram of catalyst.
- 10 ~~45.~~ (Previously presented) The process according to claim 1 wherein the bulk cobalt-based catalyst comprises from about 0.1 and 10 percent by weight of the textural promoter.
- 11 ~~46.~~ (Previously presented) The process according to claim 1 wherein the bulk cobalt-based catalyst comprises from about 2 and about 5 percent by weight of the textural promoter.
- 12 ~~47.~~ (Currently amended) The process according to claim 1 wherein the bulk cobalt-based catalyst comprises between about 40 48.8 and about 85 percent by weight of cobalt.
- 13 ~~48.~~ (Previously presented) The process according to claim 1 wherein the bulk cobalt-based catalyst comprises from about 10 and about 60 percent by weight of the binder.
- 14 ~~49.~~ (Previously presented) The process according to claim 1 wherein the binder comprises silica, alumina or combinations thereof.
- 15 ~~50.~~ (Previously presented) The process according to claim 1 wherein the bulk cobalt-based catalyst comprises between about 0.05 and 5 wt. % of a Group I metal.

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- 16 ~~51~~. (Previously presented) The process according to claim 1 wherein the bulk cobalt-based catalyst comprises between about 0.1 and about 0.2 wt. % of a Group I metal.
- 17 ~~52~~. (Previously presented) The process according to claim 1 wherein the bulk cobalt-based catalyst further comprises a non-Group I Fischer-Tropsch metal selected from the group consisting of rhenium, ruthenium, platinum, palladium, boron, silver, and combinations thereof.
- 18 ~~53~~. (Previously presented) The process according to claim 5 wherein the catalyst comprises between about 0.05 and 5 percent potassium by weight.
- 19 ~~54~~. (Previously presented) The process according to claim 1 wherein the catalyst is disposed in a slurry bed or slurry bubble column, and comprises an average particle size between about 40 microns and about 100 microns.
- 20 ~~55~~. (Previously presented) The process according to claim 1 wherein the binder in the catalyst is derived from a precursor compound of the binder and from a sol of the binder.
- 21 ~~56~~. (Previously presented) The process according to claim ²⁰~~55~~ wherein the binder sol includes particles having an average size between 10 and 100 nm.
- 22 ~~57~~. (Previously presented) The process according to claim ²⁰~~55~~ wherein the catalyst includes 5-15 wt. % binder derived from a binder precursor compound and 10-40 wt % binder derived from a binder sol.
- 23 ~~58~~. (Previously presented) The process according to claim ²⁰~~55~~ wherein the catalyst includes 5-15 wt. % binder derived from a precursor compound of the binder and 35-50 wt. % binder derived from a binder sol.
- 24 ~~59~~. (Previously presented) The process according to claim ²⁰~~55~~ wherein the binder comprises silica, and includes 5-15 wt. % silica derived from silicic acid and 35-50 wt. % silica derived from a colloidal silica sol.

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~~25~~ 60. (Previously presented) The process according to claim ~~55~~²⁰ wherein the binder comprises silica, and includes 5-15 wt. % silica derived from silicic acid and 10-20 wt. % silica derived from a colloidal silica sol.

61-66. (Canceled)

~~26~~ 67. (Previously presented) The process according to claim 1 wherein said hydrocarbons comprise at least one product selected from the group consisting of wax, diesel fuel, kerosene, jet fuel, heating oil, and gasoline.